



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/580,874	05/30/2000	Michel Ladang	192592USONPP-CONT	1709
22850	7590	11/17/2004		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER GOFF II, JOHN L.				
ART UNIT		PAPER NUMBER		
1733				

DATE MAILED: 11/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/580,874

Applicant(s)

LADANG ET AL.

Examiner

John L. Goff

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10, 13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10, 13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/25/04 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. (JP 04213341 and the English translation) in view of either one of Hosoda et al. (U.S. Patent 3,608,006) or Miyazaki et al. (JP 09150431 and see also the English abstract) and the admitted prior art (page 5, lines 21-25 and page 6, lines 1-11 of the applicants response filed 8/24/04).

Tsujimoto et al. disclose a method for producing an expanded polyolefin foam sheet wherein the surface is smooth and free of irregularities. Tsujimoto et al. teach providing an unsupported sheet comprising polyolefin (e.g. polyethylene, ethylene copolymer, etc.), crosslinking agent, and foaming agent, surface-crosslinking both faces of the sheet (i.e. the degree of crosslinking at the surface is different from the core) in a direction perpendicular to an expansion directions of the sheet to form an intermediate sheet, and then heating the intermediate sheet to expand (foam) and crosslink the sheet throughout. Tsujimoto et al. teach the surface crosslinking prior to expansion results in forming an expanded polyolefin foam sheet having a surface that is smooth and free of irregularities, i.e. has a desirable appearance. Tsujimoto et al. do not specifically note the surface crosslinking results in a unidirectional expansion of the sheet only in its thickness. However, Tsujimoto et al. are not limited to any particular degree of surface crosslinking, and Tsujimoto et al. desire a sheet having a uniform appearance, i.e. a uniform expansion would be desirable. Furthermore, Hosoda et al. and Miyazaki et al. are both exemplary of the well known technique of obtaining a unidirectionally expanded foam sheet by providing a non-extensible support layer in a direction perpendicular to an expansion direction (Column 2, lines 1-10 of Hosoda et al. and the English abstract of Miyazaki et al.). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to

experimentally determine/optimize the degree of surface crosslinking of the sheet as a function of the desired surface finish of the sheet, it being known to provide a uniform sheet by providing a non-extensible support layer in a direction perpendicular to the direction of expansion as shown for example by either one of Hosoda et al. or Miyazaki et al. as doing so would have required nothing more than ordinary skill and routine experimentation, it being further noted experimentally determining/optimizing the degree of surface crosslinking prior to foaming as a function of a desired property is well within the ordinary skill of the one in the art and does not require undue experimentation as asserted by applicant (See page 5, lines 21-25 and page 6, lines 1-11 of the applicants response filed 8/24/04).

Hosoda et al. and Miyazaki et al. are applied only as exemplary of the well known technique of obtaining a unidirectionally expanded foam sheet by providing a non-extensible support layer such as paper in a direction perpendicular to an expansion direction of the foam sheet wherein one of ordinary skill in the art at the time the invention was made would have readily appreciated non-extensible support layers include crosslinked layers as well as paper layers as both provide analogous properties (Column 2, lines 1-10 of Hosoda et al. and the English abstract of Miyazaki et al.)

Regarding claim 15, Tsujimoto et al. teach the foam sheet comprises at least 20% by weight of a polyethylene (See paragraphs 33 and 34 of the translation).

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. and either one of Hosoda et al. or Miyazaki et al. as applied above in paragraph 4, and further in view of Hitchcock (U.S. Patent 5,087,395).

Tsujimoto et al. and either one of Hosoda et al. or Miyazaki et al. as applied above teach all of the limitations in claim 13 except for a specific teaching on expanding the foam in a continuous operation. However, one of ordinary skill in the art at the time the invention was made would have readily appreciated producing the crosslinked and foamed sheet taught by Tsujimoto et al. as modified by either one of Hosoda et al. or Miyazaki et al. using a continuous process as it was well known in the art to do so as shown by Hitchcock and only the expected results would be achieved, i.e. increased production greater than that achieved by a batch process.

Hitchcock is directed to the continuous expansion of a sheet of polyolefin foam. Hitchcock teaches a mixture of a thermoplastic resin (preferably polyethylene or an ethylene copolymer), a heat-decomposable blowing agent, and a crosslinking agent extruded into a desired shape such as a sheet (Column 4, lines 15-20 and 39-41). The surface of the sheet is further crosslinked offline by a suitable radiation source with the crosslinking occurring perpendicular to a direction of expansion of the foam (Column 1, lines 23-27 and Column 2, lines 59-63). The crosslinked sheet is fed to a preheating chamber and is raised to a temperature such that the sheet begins to foam and crosslink (due to the crosslinking agent) when passed into the foaming chamber (Column 2, lines 55-59 and Column 3, lines 42-47). The sheet undergoes expansion in its thickness while in the foaming chamber to form a foamed sheet (Figure 1 and Column 3, lines 42-47). The mixture of resin, blowing agent, and crosslinking

agent is essentially ethylene copolymer or at least 20% by weight polyethylene (Column 5, lines 30-35 and Column 6, lines 22-27).

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujimoto et al. and either one of Hosoda et al. or Miyazaki et al. as applied above in paragraph 4, and further in view of Hurley et al. (U.S. Patent 5,883,145).

Tsujimoto et al. and either one of Hosoda et al. or Miyazaki et al. as applied above teach all of the limitations in claim 16 except for a teaching on forming the polyethylene or ethylene copolymer by metallocene catalysis with a density of at most 0.92 g/cm^3 . It is noted Tsujimoto et al. suggest in an exemplary embodiment to use low density polyethylene (density of 0.92). However, Tsujimoto et al. are not limited to any particular polyethylene. Hurley et al. are directed to manufacturing crosslinked polyolefin foam. Hurley et al. teach that it was known in the art to form polyolefin foams of very low density polyethylene (VLDPE) (density of 0.88 to 0.92 g/cm^3) when a flexible foam is desired (Column 1, lines 52-58). However, these known foams tend to be of low quality due to melt fracture (Column 1, lines 61-64). The melt fracture occurring due to forming the VLDPE with a low molecular weight (Column 1, lines 58-61). Hurley et al. teach using metallocene catalysts as a means to form VLDPE of a controlled molecular weight ensuring the molecular weight of the VLDPE is high enough to preclude melt-fracture (Column 2, lines 16-22 and 52-58). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use as the polyethylene taught by Tsujimoto et al. as modified by either one of Hosoda et al. or Miyazaki et al. a conventional polyethylene such as VLDPE formed using a metallocene catalyst as suggested by Hurley et al. to form a high quality flexible polyethylene (density of 0.88 to 0.92 g/cm^3) foam that is not subject to melt fracture.

Response to Arguments

7. Applicant's arguments with respect to claims 10, 13, 15, and 16 have been considered but are moot in view of the new ground(s) of rejection. In view of applicants arguments and amendment the 35 USC 112 first and second paragraph rejections are withdrawn, it being noted applicant appears to have support for the amendment on page 3, lines 35-37 of the specification. Applicants arguments regarding Tsujimoto et al. are moot in view of the new rejection. Applicants arguments regarding Hitchcock and Hurley are not persuasive as again it is noted neither reference is cited to show unidirectional expansion.

Art Unit: 1733

Conclusion


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **(571) 272-1216**. The examiner can normally be reached on M-F (7:15 AM - 3:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on (571) 272-1156. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John L. Goff



JEFF M. AFTERGUT
PRIMARY EXAMINER
GROUP 1300